AMENDMENTS TO CLAIMS

Claim 1 (currently amended): An irregular three-dimensional polygonal model of a three-dimensional irregular volume within a GIS platform wherein said model is associated with attribute data of said volume and provides GIS functionality and is constructed by the method comprising:

(a)   estimating at least one two-dimensional polygon representing a lateral boundary of said three-dimensional irregular volume;

(b)   estimating irregular surfaces representing vertical boundaries of said three-dimensional irregular volume;

(c)   clipping said estimated irregular surfaces with said estimated at least one two-dimensional polygon;

(d)   constructing multipatches of a network of triangular panels representing the irregular surfaces and sides of said three-dimensional irregular volume to produce said solid three-dimensional irregular volume model within said GIS platform; and

(e)   joining attributes of said volume to said solid three-dimensional irregular volume model within said GIS platform.

Claim 2 (canceled)

Claim 3 (canceled)

Claim 4 (original): The model of Claim 1 wherein said GIS functionality includes GIS spatial analytic techniques.

Claim 5 (original): The model of Claim 1 wherein said GIS functionality includes GIS querying techniques.

Claim 6 (original): The model of Claim 1 wherein exact locations of said volume boundaries are not specified.

Claim 7 (original): The model of Claim 1 wherein said model is associated with attribute data by joining said model with a table of attributes.

Claim 8 (canceled)

Claim 9 (canceled)

Claim 10 (original): The model of Claim 1 wherein said model is used within said GIS platform to represent an object selected from the group consisting of: an oil reservoir, a gas reservoir, concentration of a specific compound in a specific geographical area, an aquifer, quality of a specific volume of air over a geographical area, quality of a specific volume of water over a geographical area, and a combination thereof.

Claim 11 (original): A three-dimensional polygonal model of an oil and gas reservoir within a GIS platform constructed by a method comprising:
    (a)   estimating at least one two-dimensional polygon representing a lateral boundary of said reservoir;
    (b)   estimating irregular surfaces representing vertical boundaries of said reservoir;
    (c)   clipping said estimated irregular surfaces with said estimated at least one two-dimensional polygon;
    (d)   constructing a grid of regularly spaced polylineZs representing the irregular surfaces and sides of said reservoir to produce a wire frame three dimensional polygonal model of said reservoir within said GIS platform; and
    (e)   joining attributes to said model within said GIS platform.

Claim 12 (original): A three-dimensional polygonal model of an oil and gas reservoir within a GIS platform constructed by a method comprising:
    (a)   estimating at least one two-dimensional polygon representing a lateral boundary of said reservoir;

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(b)   estimating irregular surfaces representing vertical boundaries of said reservoir;

(c)   clipping said estimated irregular surfaces with said estimated at least one two-dimensional polygon;

(d)   constructing multipatches of a network of triangular panels representing the irregular surfaces and sides of said reservoir to produce a solid three-dimensional polygonal model of said reservoir within said GIS platform; and

(e)   joining attributes to said model within said GIS platform.

Claim 13 (currently amended): A method for constructing ~~a model comprising:~~

~~(a)   constructing~~ an irregular three-dimensional polygonal model of a three-dimensional irregular volume within a GIS platform comprising:

(a)   estimating at least one two-dimensional polygon representing a lateral boundary of said three-dimensional irregular volume;

(b)   estimating irregular surfaces representing vertical boundaries of said three-dimensional irregular volume;

(c)   clipping said estimated irregular surfaces with said estimated at least one two-dimensional polygon;

(d)   constructing multipatches of a network of triangular panels representing the irregular surfaces and sides of said three-dimensional irregular volume to produce said solid three-dimensional irregular volume model within said GIS platform; and

(~~b~~ e)   joining attributes of said volume to said model within said GIS platform, wherein said model provides GIS functionality.

Claim 14 (canceled)

Claim 15 (original): The method of claim 13 wherein said GIS functionality includes GIS spatial analytic techniques.

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Claim 16 (original): The method of claim 13 wherein said GIS functionality includes GIS querying techniques.

Claim 17 (canceled)

Claim 18 (canceled)

Claim 19 (currently amended): The method of claim 131 wherein said GIS functionality includes GIS spatial analytic techniques.

Claim 20 (currently amended): The method of claim 131 wherein said GIS functionality includes GIS querying techniques.

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